Transit at the Table – It Works!
## Baltimore Region MDOT MTA/LOTS Transfer Points Study

Sept. 24, 2019

Background

- The region has a population of 2.8 million with 116 million transit transfers annually.

- The public has commented to the BRTB that there is a need to do a better at providing seamless transfers.

- Funded through the UPWP, consultant and support to the LOTS

- Purpose: Initiate an ongoing process for coordinating transfers

- Transfer limitations may include:
  - Very limited information online or in printed materials
  - Non-coordinated schedules
  - Stops in close proximity where no transfer information is provided
  - Stops that may be inaccessible or require crossing an unsafe roadway

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Regional Transit Centers

Aberdeen MARC Station

Arundel Mills

Broken Land Park-&-Ride

BWI Bus. District Light Rail Station

BWI MARC Station

BWI Terminal

Church Circle

Columbia Mall

Cromwell Light Rail Station

Snowden River Park-&-Ride

Stevensville Park-&-Ride

Truman Park-&-Ride

U.S. 40 & Paul Martin

Westfield Annapolis Mall

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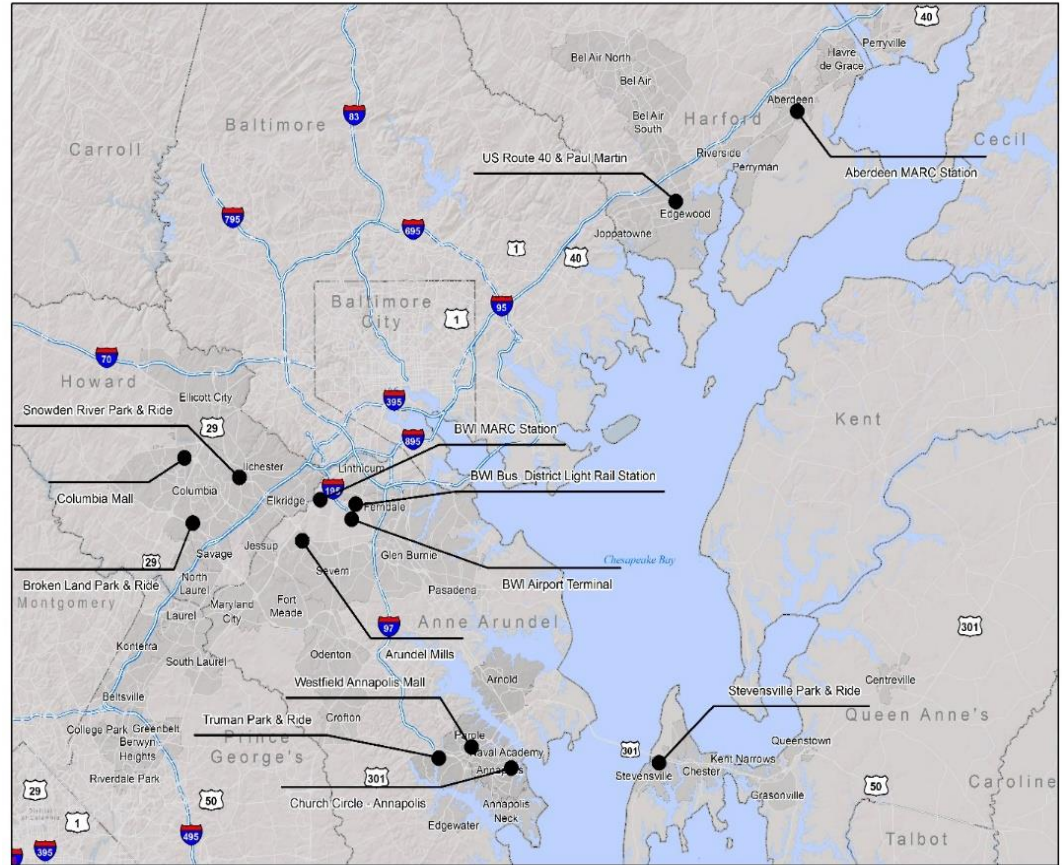
Transfers between Regional Bus Services

Provider	Annapolis Transit	Anne Arundel OOT	Harford Transit LINK	MDOT MTA Commuter	MDOT MTA LINK	Queen Anne's County Ride	RTA
Annapolis Transit	–	132	0	316	0	37	0
Anne Arundel OOT	132	–	0	136	221	23	NA
Harford Transit LINK	0	0	–	464	0	0	0
MDOT MTA Commuter	316	136	464	–	NA	32	632
MDOT MTA LINK	0	221	0	NA	–	0	842
Queen Anne's County Ride	37	23	0	32	0	–	0
RTA	0	NA	0	632	842	0	–

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Key Tasks

- Documentation of current bus stop planning processes

- Documentation of transfer fares and policies

- Develop Data Dictionary

- Detail transfer stop locations and schedule coordination

  o Collect APC data and other recorded ridership info

  o Supplement ridership data if necessary

- Summary report of stop conditions and individual transfer stop profiles

Getting Started

- Identified approximately 97 potential transfer locations
- "Transfer stops" were defined as stops that are less than ¼ of a mile apart or providing service to the same facility/complex
- Collect service information for those stops
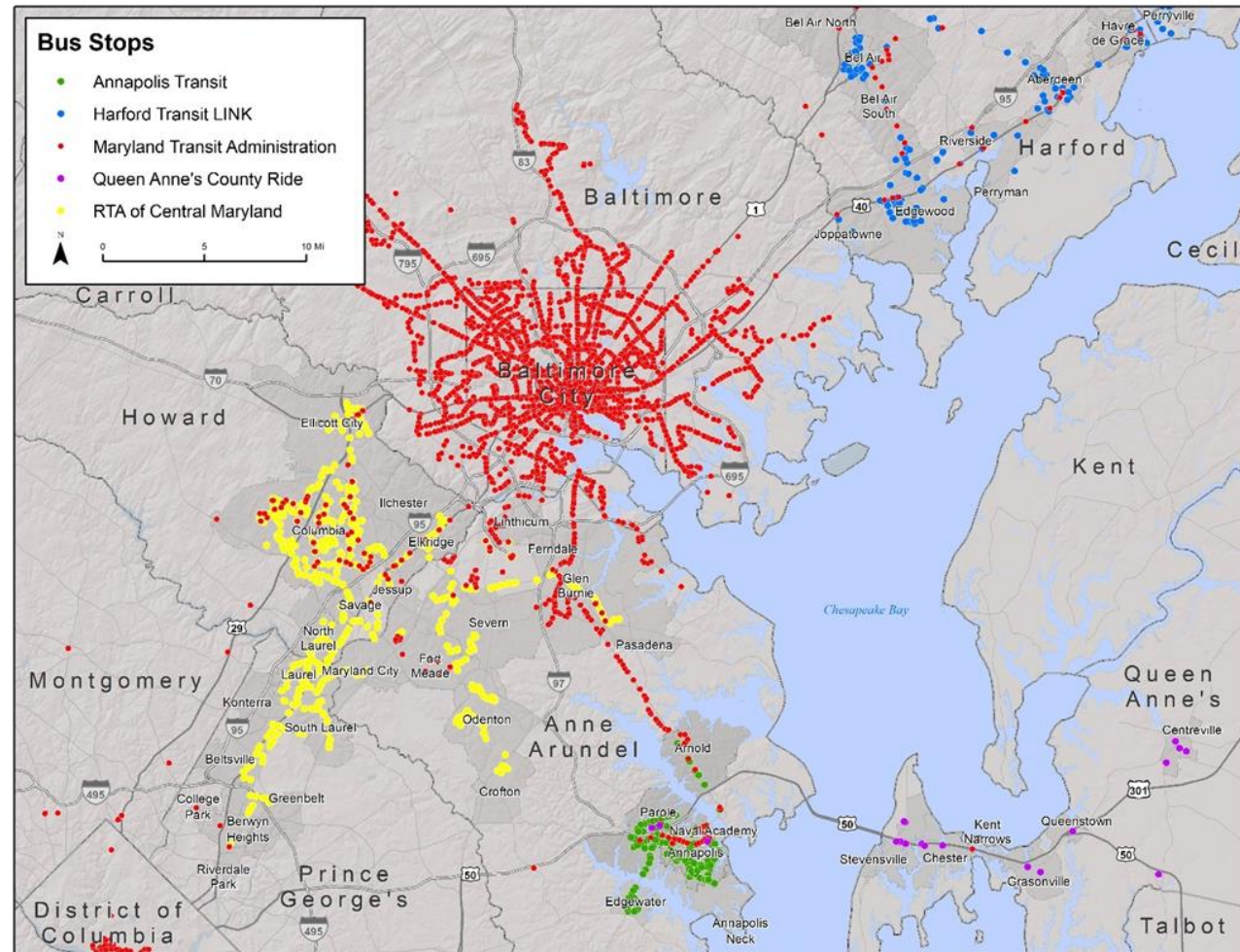
Data Dictionary

- Bus stop inventory and ADA assessment

- Pathway inventory and ADA assessment

- Wayfinding inventory

Field Survey

- Traveled to each transfer location discovered during spatial analysis

- At each transfer location we geo-located and analyzed Bus Stops, Obstructions, Curb Ramps, Intersections, and Wayfinding Signage

- Survey tool
  - GPS enabled Trimble Device
  - Uploaded and tested the data dictionary
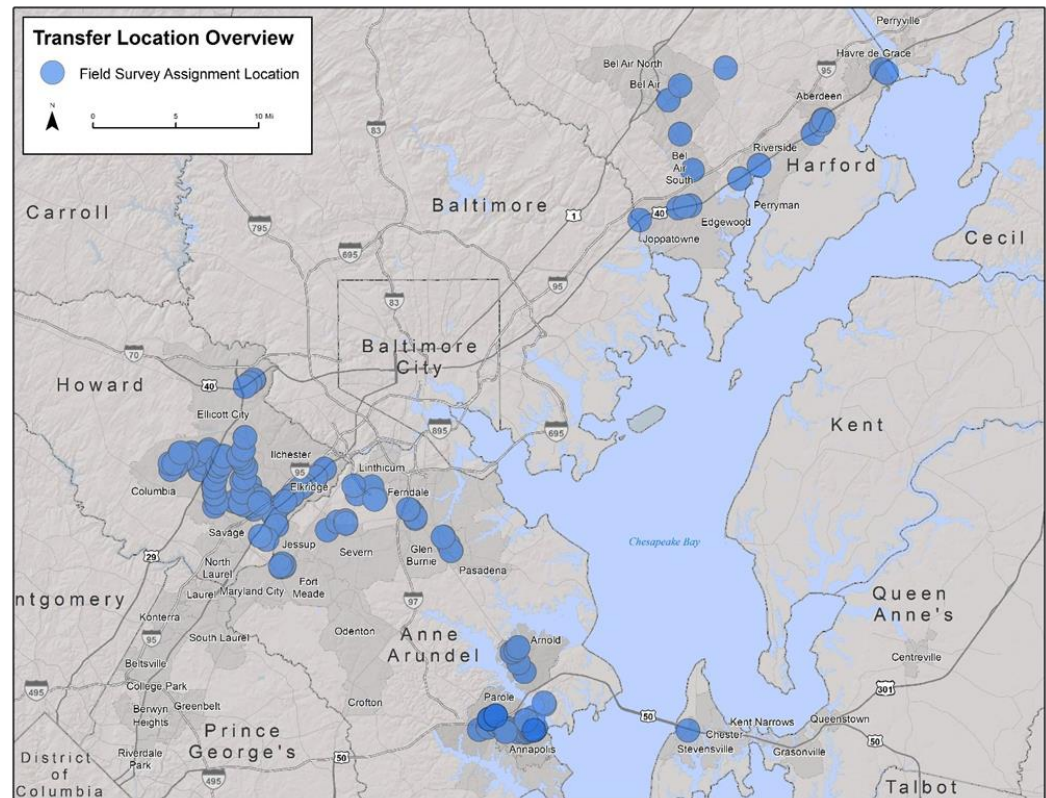
Features Surveyed

Bus Stops
- **Location**: on street and cross street, orientation, and positioning
- **Signage**: location, visibility, and route/schedule information
- **Amenities**: shelters, benches, trash receptacles, etc.
- **Accessibility**: landing pad and pedestrian connections

Pathway Obstructions
- **Widths**: continuous clear pathways free of obstructions
- **Grades**: minimum cross slopes and running slopes
- **Surface Condition**: firm and stable pathways with flush transitions
- **Protruding Objects**: encroaching edges (e.g. bus stop signs)

Curb Ramps
- **Position**: placement, type of ramps, and tactile surfaces
- **Slopes**: ramps, landing areas, and counter slopes
- **Connections**: sidewalks, crosswalks, and companion ramps

Intersections
- **Travel Controls**: traffic signals, crosswalks, and pedestrian controls
- **Connection**: curb ramps and pedestrian refuge islands

Wayfinding Signage
- **Location**: orientation and positioning
- **Information**: wayfinding information

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Basis of the Field Survey

- ADA Standards for Transportation Facilities (ADAAG)

- Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)

PASSENGER BOARDING AND ALIGHTING AREA

60" (5 FT)

96" (8 FT)

BUS SHELTER

48" (4 FT)

MINIMUM GROUND SPACE CLEARANCE

30" (2.5 FT)
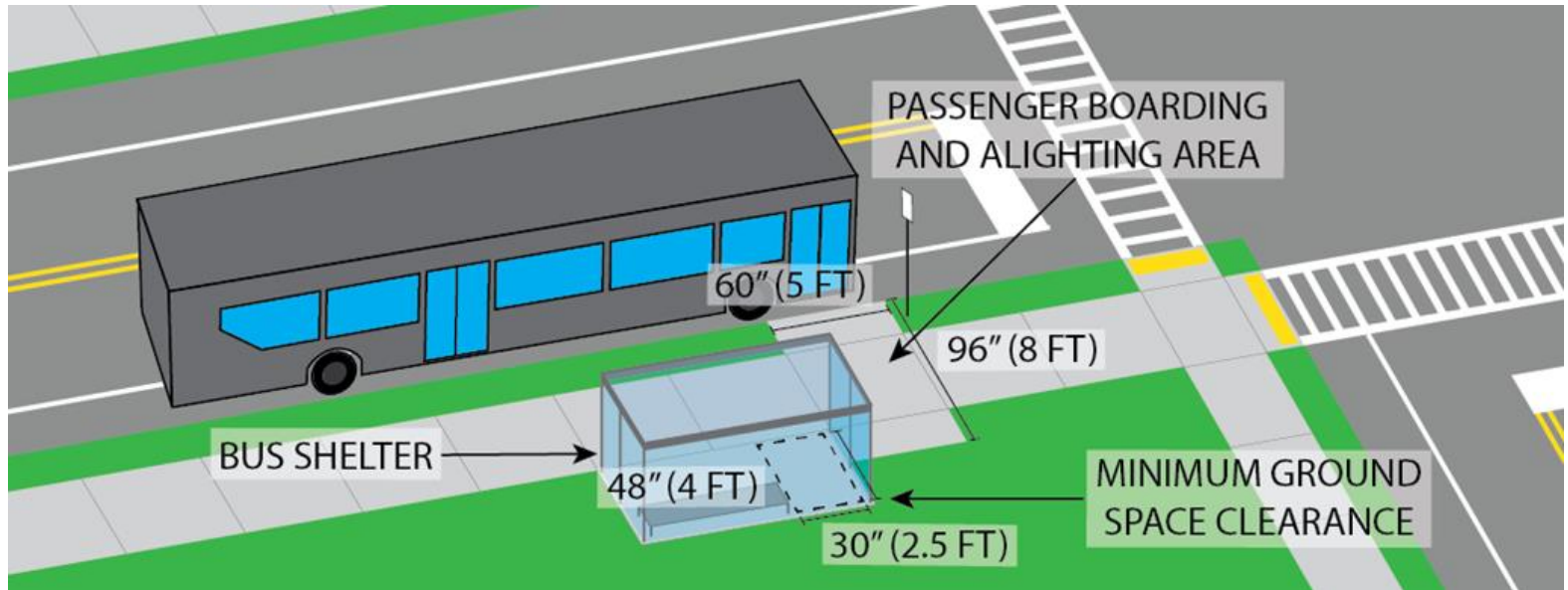
ADAAG Bus Stop Guidelines

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Existing Conditions

- 97 total locations were surveyed

- Compliance was determined for hundreds of features, including:

  - 221 bus stops

  - 204 curb ramps

  - 101 intersections

  - 13 sidewalk barriers

  - 2 wayfinding signs

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Existing Conditions

Bus stops were split into 3 categories of compliance:

– **Compliant:** A stop meets all ADA guidelines for bus stops and is connected to a paved pathway.

– **ADA Non-Compliant:** A stop does not meet all ADA guidelines for bus stops.

– **No Improvements:** While technically ADA compliant, this stop is not connected to a paved pedestrian pathway.

Pathways were also split into compliance categories:

– **Compliant:** A sidewalk or intersection satisfies all ADA guidelines and is accessible.

– **Non-Compliant, Functional:** Sidewalk or intersection is not completely compliant, but still usable (i.e. intersection between two curb ramps without detectable warnings).

– **Non-Compliant, Non-Functional:** A sidewalk or intersection is not ADA compliant or usable (unpaved pathway or intersection without traffic control)

Existing Conditions: Harford Transit LINK

Bus Stops

14 transfer opportunities

34 bus stops were surveyed

- 16 Harford Transit LINK
- 18 MDOT MTA Commuter

6 bus stops were shared

20 were ADA Non-Compliant

- Sign protrusions
- Landing pads

Harford Transit LINK Service Area Bus Stops - Reasons for Non-Compliance			
Reason	Number	% of Non-Compliant	% of All Stops
Sign less than 80"	13	65.0%	38.2%
No Landing Pad	7	35.0%	20.6%
Sidewalk as Landing Pad	3	15.0%	8.8%
Landing Pad less than 5'x8'	1	5.0%	2.9%
Catch Basin Obstruction	1	5.0%	2.9%

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Existing Conditions: Harford Transit LINK

Pathways

Transfer stops were connected by 2.5 miles of pathways

– 1.6 miles Compliant

– 0.2 Non-Compliant, Functional

– 0.7 Non-Compliant, Non-Functional.

Primary issue: missing sidewalks

Harford Transit LINK Pathways Summary		
Compliance Category	Miles	Percent
Compliant	1.6	63.7%
Non-Compliant, Functional	0.2	7.4%
Non-Compliant, Non-Functional	0.7	28.9%
Total	2.5	

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Existing Conditions: Unsurveyed Locations

- Due to imprecise GIS locations for some stops, locations were visited, but not surveyed

- 12 locations from the pre-survey desk review went unsurveyed

- Reasons for not surveying included:

  – A lack of signage

  – Stop misplaced to the extent that it exceeded the 0.25 mile threshold in reality

Existing Conditions: Invisible Stops

- These are stops where the exact location is impossible to determine due to lack of signage

- Many invisible stops are catalogued in GIS and listed on route schedules, but there is no physical evidence of them at an actual location

Existing Conditions: Damaged Signage

- Several signs were damaged to the extent that they were illegible or invisible to riders

- Damaged signs can cause confusion for potential riders and lead to a loss of confidence in service reliability

Existing Conditions: Inconsistent Design

- Many transit providers had inconsistent branding on their signage
  - MDOT MTA had four different design styles, one of which did not have the provider's name on it
  - Annapolis Transit also had varying sign designs

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Existing Conditions: Locations without Paved Pathways
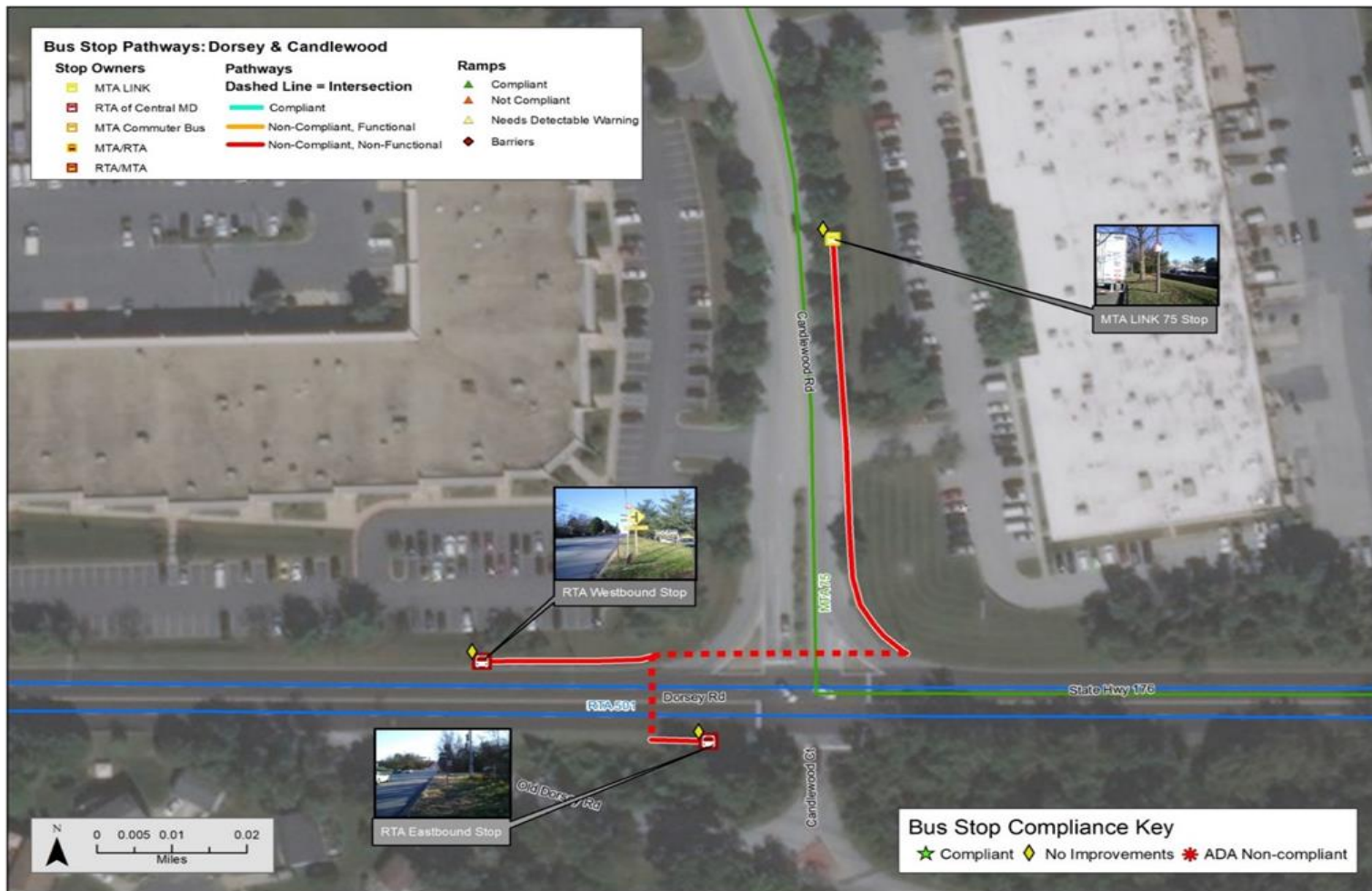
Existing Conditions: Unpaved Pathway Breaks Connection

Bus Stop Pathways: Aberdeen WalMart

Stop Owners
- Harford LINK
- MTA Commuter Bus
- Harford LINK/MTA
- MTA/Harford Link

Pathways
Dashed Line = Intersection
- Compliant
- Non-Compliant, Functional
- Non-Compliant, Non-Functional

Ramps
- Compliant
- Not Compliant
- Needs Detectable Warning
- Barriers

Bus Stop Compliance Key
- Compliant
- No Improvements
- ADA Non-compliant
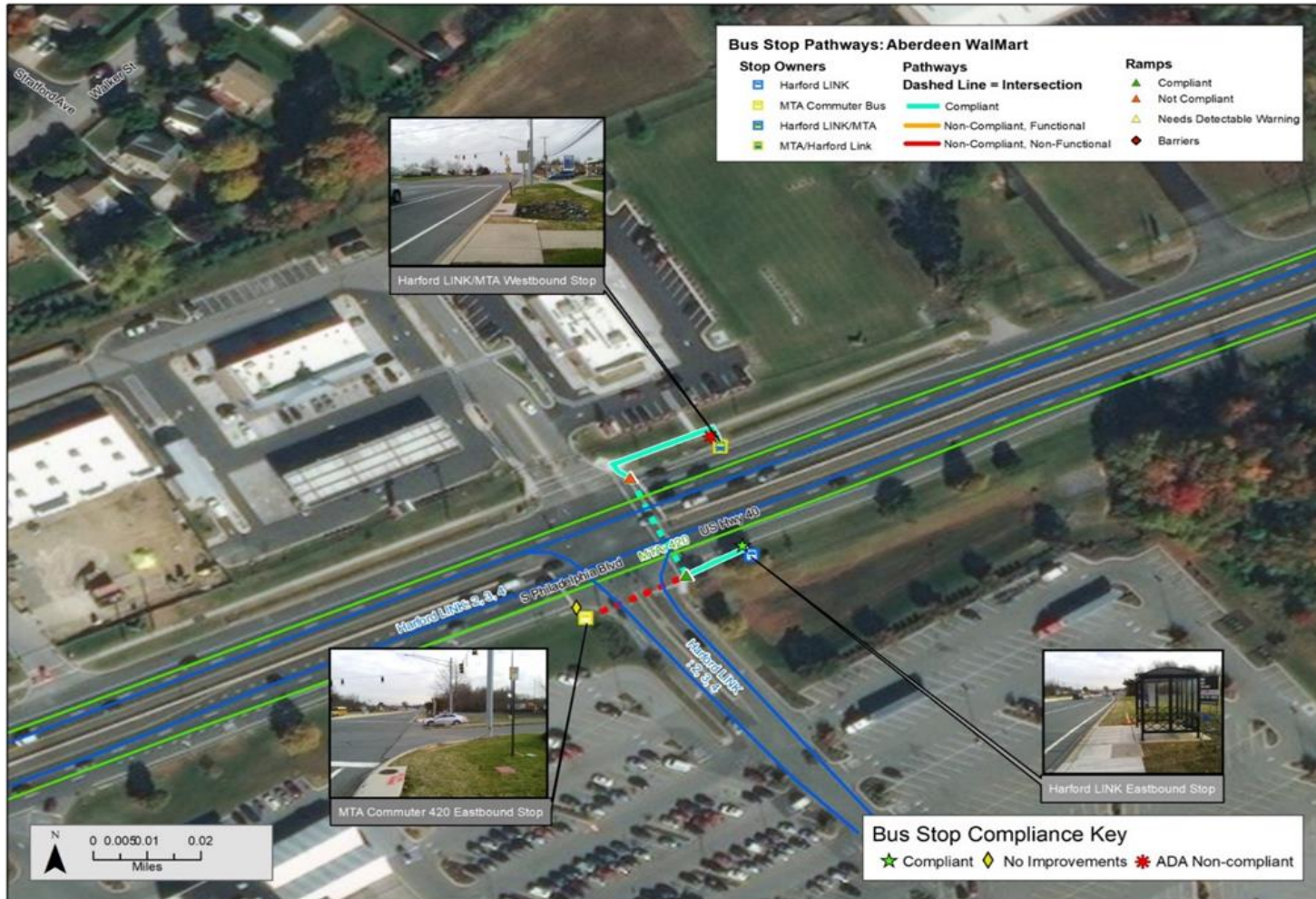
Recommended Improvements

- Are based on existing conditions with performance standards and funding constraints in mind
- Promote coordination and efficiency to reduce any potential increase in service or capital improvement costs
- Identified stop location modifications (including necessary routing adjustments)
- Schedule modifications for improved coordination
- New or improved stop amenities
- Accessibility improvements/barrier removal
- Installation of future wayfinding signage

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Improvement Costs

- Cost estimates were provided for each recommended improvement

- Summary cost for each transfer location as well as detailed line-item cost estimates

- KFH has developed costing guides for work in the DC Metro area; these were updated as necessary

- Document estimated operating impacts

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Schedule Coordination

- Virtually non-existent

- RTA is only regional provider to promote transfer locations on their schedules

- Specific inter-agency transfer information is only available through third-party trip planning tools

- Larger transit centers benefit from high-frequency service and the visibility of head signs and information cases, but transfer information / wayfinding is limited

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Fare Coordination

Regional Fare Collection Partnership
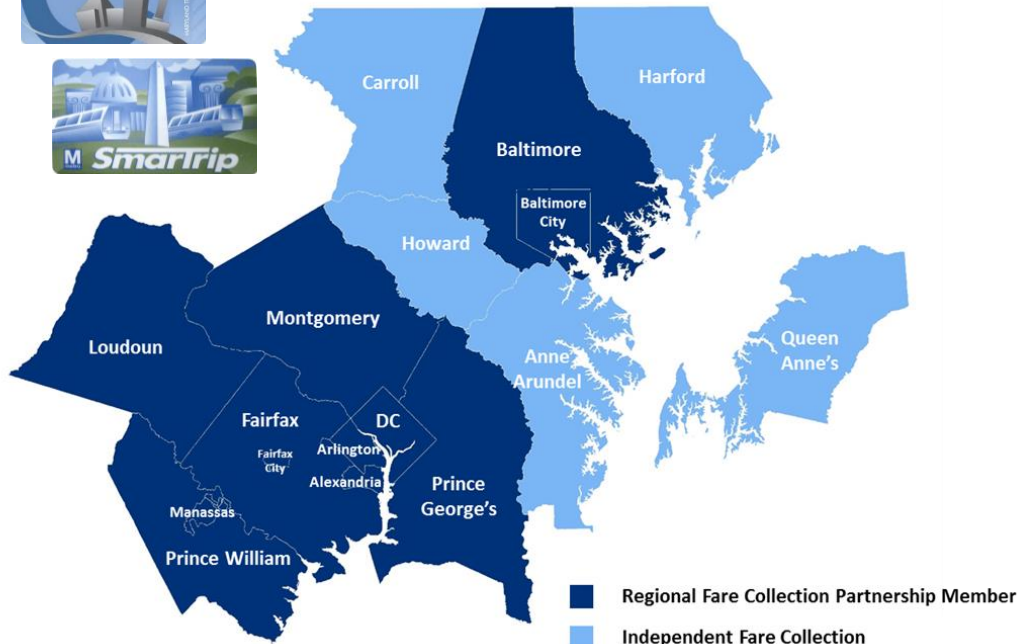
- Limited fare coordination in the Baltimore region despite regional partnership

- RTA provides free transfers to riders with CharmCard or SmarTrip at select transfer locations

- No fare reciprocity between other Baltimore regional providers

- Day passes are replacing intra-agency transfer fares

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Prioritization Methodology

Step #1
Classify Each
Transfer Location

Step #2
Rank Total Daily
Trips to Each
Transfer Location

Step #3
Assign
Prioritization Rank

Transit Center

Enhanced Stop

Basic Stop

Sort Higher to Lower

Sort Higher to Lower

Sort Higher to Lower

Priority
Order

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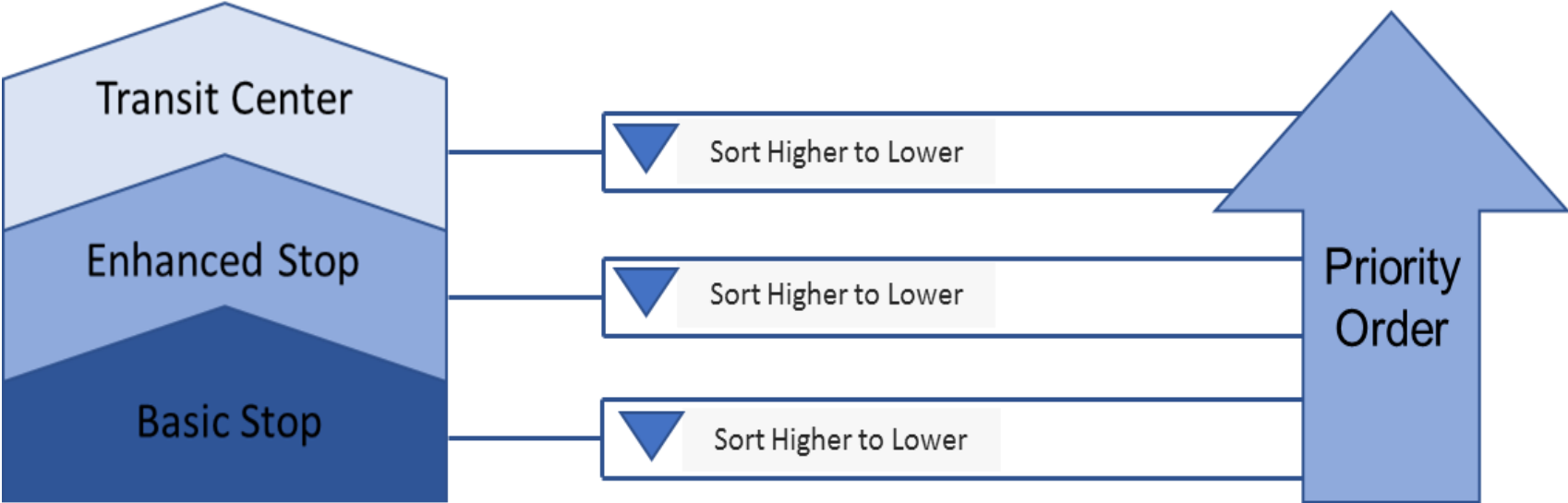
Aberdeen MARC Station

Aberdeen MARC Station		
Harford County		
Required Improvements		
N/A	0	$0.00
Enhanced Improvements		
Wayfinding Signage	1	$200.00
Stop 1	**Primary Owner:**	**MTA Commuter Bus**
New Compliant Landing Pad	1	$4,000.00
New Sign	1	$200.00
New Information Case	1	$500.00
Stop 2	**Primary Owner:**	**Harford Transit Link**
New Information Case	1	$500.00
Digital Display	1	$1,000.00
New Sign	1	$200.00
	Location Cost:	**$200.00**
	Stop 1 Cost:	**$4,700.00**
	Stop 2 Cost:	**$1,700.00**
	Total Cost	**$6,600.00**

Transfer Opportunities

Bus Bays at the Aberdeen MARC Station (left); MTA Commuter Bus Stop Across from the Aberdeen MARC Station (right)

Jurisdictions

Improvement Type	Annapolis Transit		AA County Transit		Harford Transit LINK		MDOT MTA		RTA		QA's County Ride	
	Amount	Cost	Number	Cost	Number	Cost	Number	Cost	Number	Cost	Number	Cost
Crosswalks	4	$1,200	4	$1,200	8	$2,400	2	$600	27	$8,100	-	-
Curb Ramps	7	$24,500	12	$42,000	13	$45,500	6	$21,000	45	$157,500	-	-
Detectable Warnings	16	$1,200	12	$900	22	$1,650	10	$750	73	$5,475	-	-
Digital Displays	3	$3,000	2	$2,000	1	$1,000	10	$10,000	12	$12,000	-	-
Information Cases	8	$4,000	2	$1,000	1	$500	7	$3,500	11	$5,500	-	-
Landing Pads	8	$32,000	3	$12,000	10	$40,000	74	$296,000	45	$180,000	-	-
Shelters	3	$45,000	-	-	1	$15,000	6	$90,000	-	-	-	-
Sidewalk (ft)	1	$2,900	2018	$50,450	3656	$91,400	19	$475	5700	$142,500	-	-
Median/Side Islands	-	-	-	-	-	-	-	-	1	$156	-	-
Obstructions	-	-	-	-	-	-	1	$2,900	-	-	-	-
Pedestrian Controls	4	$2,780	5	$3,475	7	$4,865	2	$1,390	27	$18,765	-	-
Bus Stop Signs	14	$2,800	16	$3,200	8	$1,600	53	$10,600	12	$2,400	4	$800
Wayfinding Signs	-	-	-	-	-	-	1	$200	-	-	-	-
Total	-	$119,380	-	$116,225	-	$203,915	-	$437,415	-	$532,396	-	$800

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Next Steps

- Added a task to develop bus stop guidelines for consideration of the Baltimore region LOTS

- Locate potential funding sources and apply

- Continue to coordinate around schedule changes

- Consider additional activities that support/strengthen regional planning and the delivery of customer focused transit service

- Join us at the table!

For More Information

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